Space Weather Forecast

Issued on Sunday, 18 February 2024 at 12:32 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low solar activity with the peak flare at common class level. Five sunspots feature on the disc. The main flare (albeit decreasing) risk remains from the large sunspot area over the southwest limb. The larger, multipart region in the northwest is the most complex sunspot region. The other spots remain smaller and simpler.

No significant Earth-directed CMEs (coronal Mass Ejections) were observed in this period, with a faint eruption from the southwest disc at around 17/0219 UTC assessed as both slow and likely passing south of Earth.

Solar Wind / Geomagnetic Activity: Solar winds are Low, just below 350 km/s. Interplanetary Magnetic Field (IMF) was weak, with the important north-south component generally weakly negative (southward). Geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was slightly above background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to Low activity is forecast, with an ongoing but decreasing chance of isolated Moderate flares. There remains a slight chance of a Strong flare on day 1 (18 Feb), primarily from the large region just over the southwest limb.

Solar Wind / Geomagnetic Activity: Recent CMEs are expected to either miss or only have very minimal impact on Earth, with the most likely for an Earth-directed component being the eruption from the north-disc on 16 Feb, passing near Earth on day 2-3 (late 19 Feb or early 20 Feb). No other significant solar wind enhancements feature in the period with mainly background winds expected. Geomagnetic activity is expected to be mostly Quiet through this period, perhaps becoming Unsettled with Active intervals with any CME arrival on days 2-3 (19-20 Feb).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to ne near background levels. However, any further eruption from either the far-sided region or those currently on the western disk could bring further enhancements, with a slight chance of reaching the S1 Minor Solar Radiation Storm level.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	10	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	30	20	30
Very Active	R3 to R5 X	No	10	5	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	10	5	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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